Attachment 1

Statement of Work

Research Support Facilities

National Renewable Energy Laboratory
Golden, Colorado

Rev. 0

April 17, 2006

Base Period	**Conceptual Design & Integrated General Development Vision**
Option 1	**Preliminary Design**
Option 2	**Final Design / Build**

Statement of Work

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Objective

The National Renewable Energy Laboratory (NREL) is the nation's premier laboratory dedicated to the research, development, and use of renewable energy and energy efficiency technologies necessary to advance our nation's goals of energy and economic security. NREL is a United States Department of Energy (DOE) national laboratory providing world-class science, engineering, and management capabilities support to DOE's Office of Energy Efficiency and Renewable Energy (EERE).

NREL's mission is to strengthen America's energy security, environmental quality, and economic vitality through public/private partnerships to enhance energy efficiency and productivity and bring clean, reliable and affordable energy technologies to the market place. To that end, NREL provides world-class basic and applied research; technology development, demonstration, and application; systems engineering and integration; and economic analysis to the world community. NREL collaborates with many of the world's leading academic and industrial partners to ensure that NREL's energy efficiency and renewable energy science and technology is widely disseminated. NREL is visited by thousands of people annually, including many of the world's policy and business leaders.

NREL proposes to design and build Research Support Facilities (RSF) that demonstrate market integration of high-performance design and building practices, showcase technology advances, and capture the public's imagination for the renewable and energy efficiency technologies that NREL is developing and sustaining. NREL plans for the efficient design and cost competitive construction of Class A office space located on government property to provide NREL with approximately 250,000 GSF, for approximately 780 NREL and DOE/GO staff that are currently housed in space acquired through costly long-term leases. NREL's more exciting and critical purpose is to demonstrate and showcase ways in which renewable and energy efficient technologies can be integrated—today—into commercial office space in an attractive, cost-effective, and environmentally responsive way.

This is a unique opportunity to demonstrate national leadership in designing and building cost-competitive high-performance, energy efficient buildings and to accelerate the contributions of renewable and energy efficiency technology advances to the nation's energy and economic security. The RSF development will explore the limits of cost-competitive, high-performance building design and construction. The RSF development will consist of multiple modules designed and constructed sequentially, thereby ensuring that successor modules benefit from accumulated design knowledge. The number of modules will be determined through the design

process and are subject to funding availability. To this end, Congress appropriated FY2006 funding for the design and construction of the first module.

The first module of the multi-module RSF development will be completed through an integrated design and build process, including collaboration among the subcontractor design/build team, the user (NREL) and the owner (DOE), national experts and expert organizations, and stakeholders.

This Request for Proposals seeks a progressive, visionary subcontractor design/build team with the commitment and willingness to collaborate with NREL to seek advice and counsel from leading renewable energy, energy efficiency, design, construction, operations, and financial experts. The goal is to produce a well-designed and functional building representing a national benchmark for cost-competitive, high-performance design and construction incorporating commercial-ready renewable and energy efficiency technologies.

Scope of Work

The scope of this RFP envisions a base period and two options to accomplish the following:

BASE Develop a Research Support Facilities conceptual design for a multi-module RSF development including a selected module. Integrate the RSF design into NREL's General Development Vision.

- Task 1.1 Develop conceptual strategies for the multi-module RSF development and Alternatives A and B for the first module (Alternatives A and B are described below.)
- Task 1.2 Lead and conduct a design charette for Alternatives A and B for the first module
- Task 1.3 Develop a preliminary conceptual design for Alternatives A and B for the first module
- Task 1.4 Lead and conduct a professionals/stakeholders forum
- Task 1.5 Initiate Value Engineering process led by a Value Engineering professional
- Task 1.6 Develop and prepare a Life Cycle Cost Analysis for Alternatives A and B
- Task 1.7 Provide a conceptual design report (CDR) for the selected module
- Task 1.8 Provide a definitive proposal for the development of a preliminary design for the selected module
- Task 1.9 Integrate the conceptual design of the RSF multi-module development into NREL's General Development Vision

[Base Period details shown at Attachment 1]

OPTION 1 Develop a preliminary design for the selected module of the multi-module RSF development

- Task 2.1 Preliminary Design

A. Final construction documents and submittals for:

1. Site Grading
2. Underground Utilities and In-Slab Utilities
3. Foundation Design and Superstructure

B. Preliminary design for remaining building components and systems

Task 2.2 Update Value Engineering Study led by a Value Engineering professional

Task 2.3 Provide a definitive proposal for the final design / build for the selected module

[Option 1 details shown at Attachment 2]

OPTION 2 Final Design / Build of the selected module for the multi-module RSF development

Task 3.1 Complete the final design of the selected module

Task 3.2 Complete Value Engineering Study led by a Value Engineering professional

Task 3.3 Administer/manage construction of the selected module

Task 3.4 Complete construction of the selected module

[Option 2 details shown at Attachment 3]

Two alternatives will be reviewed during the preliminary conceptual design tasks to select one alternative for the first module of the RSF multi-building development.

Alternative A - The preliminary design and final design/construction of the first module of the multi- module Research Support Facilities development shall be delivered in accordance with the objectives stated above. Elements that NREL considers critical in this Alternative A include: consistency and compatibility within the overall designed construct of the RSF development and working integration and planned progression to showcase energy efficient, sustainable, and environmentally responsive technologies. Occupancy will be primarily offices with a visitor's area to showcase the high-performance building design, features, and state-of-the-art technologies. The occupancy may include other specialty spaces such as meeting/conference space, a library, and/or a data center. The completed multi-module RSF development will accommodate approximately 780 staff; and this Alternative A will result in a first module that accommodates approximately 130-160 staff. Final occupancy and size will be determined as a result of conceptual design efforts. The price of the Alternative A preliminary design and final design/construction for the first module should be competitive with similar Class A office buildings but shall not exceed a guaranteed maximum price of $9 million. The guaranteed maximum price will not include Base Period tasks.

Alternative B – The preliminary design and final design/construction of the first module of the multi-module Research Support Facilities development shall be delivered in accordance with the objectives stated above. In addition, this Alternative B shall optimize the critical elements described under Alternative A above and maximize efficiencies and economies of scale leading to a significant increase in occupancy with a decrease in the cost per square foot of the multi-module RSF development. Further, this Alternative B will enhance the balance, integration, and architectural impact of the multi-module RSF development and optimize the inter-relationship, functionality, and operational efficiency of the multi-module RSF development. Occupancy will be primarily offices with a visitor's area to showcase the high-performance building design, features, and state-of-the-art technologies. The occupancy may include other specialty spaces such as meeting/conference space, a library, and/or a data center. The completed multi-module RSF development will accommodate approximately 780 staff; and this Alternative B will result in a first module that accommodates approximately 250-275 staff. Final occupancy and size will be determined as a result of conceptual design efforts. The price of the Alternative B preliminary design and final design/construction for the first module should be competitive with similar Class A office buildings but shall not exceed a guaranteed maximum price of $18 million. The guaranteed maximum price will not include Base Period tasks.

For either alternative, the first module of the RSF development shall be an aesthetically pleasing building with an architectural image consistent with the site and NREL's identity. It shall meet both NREL's functional requirements, and the aggressive energy and sustainability goals for the project including the demonstration and showcasing of cost-effective, sustainable, and energy efficient design—a design that meets an energy-efficiency target of 25KBTU/ft2/year and that meets a Platinum certification under the standards of the U.S. Green Buildings Council (USGBC) Leadership in Energy and Environmental Design (LEED) Certification.

General Requirements

In addition to the scope of work stated previously, the following functional requirements and criteria shall apply to this subcontract. Referenced documents are also a part of these requirements.

General

1. The Subcontractor shall provide a design/build team to include architectural, engineering, land use planning, specialty services, and construction expertise to perform the design and construction defined in the Statement of Work. Active involvement by all members of the Subcontractor team is required from CDR through the construction phases. Cost analyses and constructability input is required during all phases of the project.
2. The Subcontractor shall specify key personnel, by name and title, necessary to the successful performance of the project. Such key personnel shall be assigned for the duration of the project. Replacement of key personnel will require justification deemed acceptable by NREL in writing.
3. International building code criteria shall be utilized and the subcontractor will ensure compliance with the current codes adopted by the jurisdiction in which the property resides. The Subcontractor will ensure compliance with all international building code criteria for earthquakes and other potential natural disasters.

4. The subcontractor shall provide all necessary services, labor, materials, consultants, reproduction, supplies, travel and incidentals as required to prepare a Conceptual Design Report, preliminary design, and final design/construction of the selected module and related site improvements to include adequate parking and amenity zones. The Conceptual Design Report shall be consistent with generally accepted A/E industry practice and shall be consistent with the NREL Project Manager Handbook, NREL Design Standards, and NREL Standard Specifications. The Conceptual Design must consider and be consistent with the current NREL General Development Plan (GDV).
5. All Drawing submittals shall follow NREL CAD standard.
6. Architectural Programming: The architectural programming shall provide the basis for the space requirements for the various functions to be accommodated. The subcontractor shall complete an architectural program for the facility that identifies the spaces devoted to offices and specialty spaces. The program shall define the number of offices by various categories or office types. Each specialty space shall be defined in some detail. The subcontractor shall work with NREL to conduct interviews or programming sessions with the various user groups at NREL, tour facilities that have features that are relevant for NREL, or use other means to gather relevant information needed for programming. The program shall establish desired functional and adjacent relationships and establish a time-phased plan for occupancy for the multi-module RSF development. The subcontractor shall establish the spatial adequacy and utilization rate of the selected module. The subcontractor shall verify the gross square footage required, as well as establish the net usable square footage. The programming is due to NREL as the first deliverable at the Design Charette.
7. The selected module as well as the other proposed modules shall be designed to minimize blockage of the site line of the Solar Energy Research Facility (SERF) or the Science and Technology Facility (S&TF) from I-70 yet the height of all the buildings should be designed to minimize the development footprint, create a density to encourage walking between buildings, and take into account building orientation for energy efficiency and daylighting. (These all contribute to the Platinum LEED requirements).

Building

1. Emergency and life safety systems including lighting, fire protection system, and security/access control shall be provided with a standby generator and automatic transfer switch or appropriate battery backup system to be activated as required.
2. Fire Safety. Buildings shall be provided with a fire alarm system and automatic fire suppression system (sprinklers). The subcontractor shall provide specialized fire safety design expertise. The subcontractor shall provide design services for the fire suppression and electronic fire alarm and detection systems. The Subcontractor shall be required to work with the local fire district, West Metro Fire Protection District.
3. HVAC design shall consider personnel safety and health as the primary factors. No control systems or components shall be permitted that tend to compromise safety or health. The design shall consider energy utilization as a system parameter and shall incorporate proven and practical features such as night setback, day-lighting, solar supply air pre-heating, heat recovery, high efficiency lighting and motors, and other innovative energy conservation measures to reduce the building energy use to an optimal level.

4. Buildings shall be designed for handicapped access in accordance with all applicable federal, state and local codes and ordinances including Americans with Disabilities Act (ADA) and Uniform Federal Accessibility Standards UFAS.
5. Buildings shall be provided with an independent Energy Management and Control System (EMCS) compatible with existing NREL EMCS.
6. Several different structural systems concepts will be developed and evaluated during the conceptual design. Based on the conceptual design analysis, the subcontractor will make a design recommendation to NREL at or before 60% Design Review Presentation. Prepare schematic design drawings of recommended structural system. Buildings shall be designed to minimize the transmission of utility equipment noise and vibration beyond the equipment rooms
7. All ceiling spaces, utility shafts and chases shall be designed and arranged to provide ample space for reasonable addition of future service runs. The design shall incorporate the necessary access spaces for maintenance of equipment and services.
8. Electrical and mechanical systems concepts will be developed. Design drawings consisting of the electrical one line and panel schedules and mechanical systems with flow diagrams and process and instrumentation diagrams will be prepared.
9. Building utilities, systems and services shall be designed to accommodate all known existing and anticipated requirements with an allowance of 20% extra capacity for future growth, with no diversity factor allowed.
10. Telecommunications conduit and wiring shall be supplied and installed by the Subcontractor. Terminations and network design shall be by NREL.
11. Separate metering is required for office areas, lighting, and mechanical systems per DOE/EE-0312, Guidance for Electric Metering in Federal Buildings.
12. Buildings shall be designed for a minimum life expectancy of 50 years.

Site

1. Designs shall consider and conform to NEPA requirements and NREL's Storm Water Pollution Prevention plan for the site.
2. Landscaping shall be consistent with the requirements in the GDV and should generally be natural with a minimal improved, irrigated area adjacent to the building entrance. Adequate parking shall be provided. Ratio shall be determined in Conceptual Design.

Space Planning

1. The office space and overall space utilization parameters shall be developed on a requirement specific basis.
2. Layouts shall provide maximum access to daylight and views to the outdoors.
3. The layout\functionality should reflect the culture of a research and development organization.
4. Layouts shall promote and enhance the comfort and productivity of the occupants.

Energy Efficiency –LEED – Sustainable Building

1. The Subcontractor shall seek and consider the advice and counsel of experts to incorporate meaningful and leading-edge cost-effective, sustainable, and energy efficient applications. The use of passive solar features, such as daylighting, and energy conservation features shall be maximized. Active solar features, such as domestic hot water, shall be evaluated and used to the fullest extent practical. Buildings shall be

designed to exceed 10 CFR Part 435, Energy Performance Standards for New Buildings. The subcontractor shall develop and evaluate the building energy concepts utilizing DOE 2.1E, or Energy Plus, as a design and reporting tool. The subcontractor shall submit the evaluation method and certify that the energy performance for the selected module shall be achieved. The same performance evaluation shall apply to the multi-module RSF development in the conceptual design.

2. The energy consumption for the selected module shall be not greater than 25KBTU/Sq.Ft. /Year.
3. Renewable products shall be used where cost and schedule effective. A list of options for renewable products shall be included in the conceptual design.
4. The subcontractor shall provide Waste Management Plans, Waste Minimization procedures, and provide samples of plans to be used in construction documents.
5. The multi-module RSF shall be a contextually appropriate and uniquely designed development that will demonstrate cost-effective, sustainable, and energy efficient design. The selected module shall be designed to meet the U.S. Green Buildings Council (USGBC) Leadership in Energy and Environmental Design (LEED) Platinum certification. The subcontractor shall work with NREL and outside experts to evaluate and develop a comprehensive strategy to achieve a Platinum certification through the sustainable\energy efficient features of the modules and prepare a preliminary and final LEED checklist showing how the multi-module RSF development and the selected module, as conceptually designed, meets a LEED Platinum certification while simultaneously meeting the cost-effectiveness criteria.
6. The subcontractor shall assist NREL to develop a comprehensive LEED strategy and to document the requirements and measure the quality of the LEED submittals.
7. The selected module shall incorporate state-of the art demonstrations of the most recent energy-efficiency/renewable energy technology advances as a technology showcase. Heat recovery systems, maximum daylighting, independent metering systems, and other technologies will be incorporated into the building.
8. NREL staff is experienced in the design of sustainable and energy-efficient building systems. NREL staff will work with the subcontractor throughout the conceptual design, preliminary design, and final design process to develop and evaluate sustainable and energy-efficient elements of the building. Preliminary work has been done on energy performance goals including:
    - DOE-2 energy analysis of a 100,000 ft2 rectangular 3 and 4 -story generic office building in our climate to look at both base case building energy performance as well as the energy impact of a series of possible energy savings strategies such as daylighting, ground-source heat pumps, indirect\direct evaporative cooling and others.
    - The analysis also evaluated how much photovoltaics would be needed to meet 5% of the building load.

Environment Safety and Health

1. NEPA Documentation: The subcontractor shall provide to NREL ES&H staff sufficient basic information, including design information, as is necessary and required to complete NEPA documentation. The CDR shall provide guidance in the areas of safety and NEPA. An Environmental Assessment is required, which NREL shall undertake and complete based on the CDR information.

2. Safety Plans: The subcontractor shall provide initial Hazard Assessment report for the RSF site and selected module with guidance from ES&H. NREL implements and enforces OSHA standards for general industry and construction. In addition, NREL and its construction subcontractors are required to comply with applicable local, state, and federal ES&H standards, laws, and regulations including but not limited to the Resource Conservation and Recovery Act, Clean Water Act, and Clean Air Act. In situations where conflicts exist between several applicable standards, the standard providing the necessary level of ES&H protection commensurate with the hazards present shall apply. The requirements of other applicable NREL procedures are applied to construction projects as necessary to control the hazards and maintain an acceptable level of risk. NREL, DOE, the State of Colorado, or other authorities having jurisdiction may perform enforcement activities.
3. 29 CFR 1910, Occupation Safety and Health Standards for General Industry and 29 CFR 1926, Safety and Health Regulations for construction are in effect and enforced by DOE.

Security

1. Building and Site Security considerations: The subcontractor shall consult with NREL security and provide current design information for site and building.
2. All designs must include the following security performance objectives:
   a. Provide protection of all persons and property on or near NREL sites from security threats.
   b. Trashcans, thick shrubbery, or anything that might provide concealment may not be adjacent to the building's exterior.
   c. All windows accessible from the ground must be sealed or alarmed.
   d. Security alarms and electronic access control systems and devices must be compatible with current systems and devices and connected to backup power. NOTE: Final Homeland Security Presidential Decision (HSPD-12) requirements may be issued for security alarms and electronic access control systems and devices. If requirements are defined during the term of this contract, NREL will issue a directed change to the subcontractor design/build team to ensure the RSF modules comply with such requirements. The subcontractor and NREL will negotiate an acceptable adjustment to price for this requirement.
   e. All doors must be compatible with standard keyways and/or electronic access control systems and all exterior hinges must be welded.
   f. Interior access to utility and electrical rooms must be controlled (locked doors).
   g. Appropriate exterior (building and parking) security lighting and digital cameras should be included.
   h. Air intakes must be sufficiently inaccessible (roof mounted or adequately sealed from mischief)

Project Management

1. Meetings and Reporting: The subcontractor shall include the necessary time for design charette and professionals/stakeholders forum, presentations and meetings to develop, present review, and gain approval of concept design and building LEED/energy efficiency strategy. This includes time to present to NREL's Design Advisory Board and attendance at the design charette and professionals/stakeholders forum. The subcontractor will update the NREL Project Manager weekly throughout the duration of the

subcontract. It is estimated the subcontractor will need to develop or present the concept at the design Charette and at least one professionals/stakeholders forum. Weekly progress meetings shall be held to review preliminary and final design, and during construction. All meetings shall be documented by the subcontractor with copies provided to NREL.

2. The subcontractor will utilize the NREL Earned Value Measurement System (EVMS) to document project progress.
3. NREL is responsible for the LEED submittals.

Schedule

1. If all options are exercised, NREL's target is 50% completion of construction of the selected module by October 15, 2007 with final completion on or before May 28, 2008. If this schedule is not practical, the subcontractor design/build team shall propose the best schedule that reasonably meets NREL's expectations for a commercial design/build project.
2. The subcontractor shall provide a project schedule for the entire effort from design through construction of the selected module. A resource loaded project schedule (RLS) shall identify all resources and activities required for the design as well as for construction and occupancy portions of the project. The RLS will be used to establish subcontractor progress payments employing NREL's and subcontractor's EVMS.

Price Proposal

1. The subcontractor shall provide a price proposal with the following elements:
   a. Conceptual strategies for the multi-module RSF development.
   b. Design Charette for two Alternatives.
   c. Preliminary conceptual design for two Alternatives.
   d. Professionals/Stakeholder Forum.
   e. Value Engineering process implementation.
   f. Life cycle Cost Analysis for two Alternatives.
   g. Conceptual Design Report for selected Alternative.
   h. Definitive proposal for Option 1.
   i. Integrate RSF into General Development Vision.
   j. The Base Period shall be documented and analyzed in terms of price. This analysis will be used by NREL\DOE working with the subcontractor, in conjunction with the programming information and conceptual design, to make the final determination on the size and location of the selected module. This information will be discussed in the Design Charette.

2. The price proposal shall be provided by an estimating firm with specific experience in LEED projects and Denver, Colorado, specific cost data. Each version of the price proposal shall be clearly labeled with Revision Number and Date.

3. NOTE: NREL will obtain an independent price estimate for purposes of determining price proposal reasonableness and price analysis.

Price Proposal Table

Provide a price for the following Tasks and Alternatives. Price proposal should include a price for all items indicated by an "x" below.

Item	Price proposal (same regardless of Alternative chosen)	Alternative A	Alternative B
Base Period – Submit prices for Tasks 1.1 thru 1.9 with initial proposal			
Task 1.1	x		
Task 1.2	x		
Task 1.3		x	x
Task 1.4	x		
Task 1.5	x		
Task 1.6		x	x
Task 1.7		x	x
Task 1.8 (definitive proposal for Option 1, selected alternative)		x	x
Task 1.9, integrate RSF into GDV		x	x
Total	x	x	x

Note 1: In the Base Period, the total price for Alternative A = prices for tasks in column 1 plus 2; the total price for Alternative B = the price for tasks in column 1 plus column 3.

Attachment 1

Details for Base Period

BASE Develop a Research Support Facilities conceptual design for a multi-module RSF development including a selected module. Integrate the RSF design into NREL's General Development Vision.

- Task 1.1 Develop conceptual strategies for the multi-module RSF development and Alternatives A and B for the first module
- Task 1.2 Lead and conduct a design charette for Alternatives A and B for the first module
- Task 1.3 Develop a preliminary conceptual design for Alternatives A and B for the first module
- Task 1.4 Lead and conduct a professionals/stakeholders forum
- Task 1.5 Initiate a Value Engineering Study led by a certified Value Engineering professional
- Task 1.6 Develop and prepare a Life Cycle Cost Analysis for Alternatives A and B
- Task 1.7 Provide a conceptual design report (CDR) for the selected module to incorporate the findings and recommendations of both the Design Charette and the Professional Stakeholders Forum
- Task 1.8 Provide a definitive proposal for the development of a preliminary design for the selected module
- Task 1.9 Integrate the conceptual design of the RSF multi-building development into NREL's General Development Vision

The Subcontractor will receive Notice to Proceed on Base Period Tasks 1.1 through 1.9 concurrent with subcontract award.

NREL will separately employ the services of an independent commissioning agent. This agent will be integrated into all phases of the project from CDR through final construction completion.

Task 1.1 Develop conceptual strategies for the multi-module RSF development and Alternatives A and B for the first module

Conceptual Strategies – In preparation for the Design Charette, the subcontractor in collaboration with NREL shall develop a set of conceptual strategies for Alternative A and a set for Alternative B. Each set should address as a minimum:

- RSF development composition (number, size, and footprint of buildings)
- RSF development occupancy (staff and special spaces)
- Utilities and infrastructure to support the RSF development

- Selected module gross square feet (gsf), net square feet (nsf) and footprint
- Selected module Occupancy (staff and special spaces)
- Selected module Energy Efficiency
- Selected module LEED certification
- Selected module Architectural features

Task 1.2 Lead and conduct a Design Charette for Alternatives A and B for the first module – Design Charette to be held 38 calendar days from Base Period Notice to Proceed

Design Charette – The subcontractor shall lead and conduct a Design Charette utilizing the sets of strategies developed in the Conceptual Strategies Task 1.1. The subcontractor shall work with NREL to organize the key participants including NREL management, the US DOE and other key advisors, such as members of NREL's Design Advisory Board. The objective of the Design Charette is to discuss, evaluate, and provide recommendations on these key conceptual issues as they may apply to each of the alternatives for the first module of the multi-module RSF development. The subcontractor shall provide NREL with notes and conceptual drawings resulting from the charette.

Deliverables – Due Date 5 calendar days after Design Charette

Table 1.2. Design Charette Deliverables

ITEM	DESCRIPTION	
1	Bound copies of the following:	5 sets
	Discussion/Decisions	
	Programming/Space Allocation	
	Daylighting/Energy Efficiency	
	Site Plans	
	Floor Plans	
	LEED Point Decisions	
	Building Elevation/Materials	

Task 1.3 Develop a preliminary conceptual design for Alternatives A and B for the first module

Alternatives Development – The subcontractor, incorporating the results and recommendations of the Charette, shall develop a preliminary conceptual design for each of the Alternatives. Each approach shall present the recommended implementation of key objectives accompanied by supporting sketches, drawings, floor plans, and elevations. Each alternative shall also include summary schedule, price range estimate, and scope for Alternatives A and B and a summary schedule, price range estimate and scope for the supporting utilities and infrastructure.

<u>Deliverables</u> – Due Date 28 calendar days after completion of Design Charette

ITEM	DESCRIPTION	Alternative A	Alternative B
1	Documentation - Bound - Sections clearly labeled	10 sets – Includes Items 2 thru 9	10 sets – Includes Items 2 thru 9
2	Key Objectives		
3	Supporting Sketches		
4	Drawings		
5	Floor Plans		
6	Elevations		
7	Scope		
8	Summary Schedule		
9	Price Range Estimate		

Task 1.4 Lead and conduct a professionals/stakeholders forum

Professionals/Stakeholders forum – The subcontractor shall participate in and support a professionals/stakeholders forum coordinated and directed by NREL. The purpose of the forum is to seek professional peer review and to reach consensus on a recommended alternative.

Alternative Selection - Subsequent to the forum, NREL will inform the subcontractor of the selected Alternative within 14 calendar days. NREL may issue a Stop Work Notice in order to allow sufficient time for Alternative selection.

Task 1.5 Initiate Value Engineering process led by a Value Engineering professional

Initiate a Value Engineering Study—The subcontractor shall identify a Value Engineering professional to initiate and begin preliminary development of the Value Engineering process. The final study will be produced under Option 2, Final Design. VE components shall be identified during conceptual design. The VE study shall take into account the Life Cycle Cost Analysis information.

The Subcontractor shall document and certify that value engineering has been incorporated into the project.

Task 1.6 Develop and prepare a Life Cycle Cost Analysis

Life Cycle Cost Analysis—the subcontractor shall develop and prepare a Life Cycle Cost Analysis for Alternative A and Alternative B based on preliminary conceptual designs. The subcontractor shall provide and document a Life Cycle Cost Analysis of major building systems and components. This analysis shall take into account all costs of acquisition, ownership and disposal, and be consistent with OMB-Circular A-94.

The subcontractor shall update the Life Cycle Cost Analysis based upon the completed CDR.

Task 1.7 Provide a conceptual design report (CDR) for the selected module

Complete CDR for the Selected Alternative – The subcontractor will complete the CDR for the selected alternative. The CDR includes a general conceptual design of the multi-module RSF complex to provide an overall context (see A thru E below).for the specific conceptual design of the Alternative module selected in Task 1.4 above.

A. Lead and develop the overall programming efforts to plan the multi-module RSF development.
B. Lead and develop site planning effort, including utility investigations for existing and future requirements for the multi-module RSF development and selected module.
C. Develop several options for preliminary building concepts (plans, elevations, sections) for the selected Alternative needed to fit target preliminary program areas. Working with NREL and DOE, test and evaluate various schemes. Once the schemes are considered and agreed to, develop plans, sections and elevations for the conceptual design of the selected Alternative. Provide one or more renderings for the purpose of explaining the conceptual design. At least one rendering shall be drawn in context of the NREL campus to illustrate relationships with other facilities.
D. Provide site analysis / options for locations of the multi-module RSF development on the South Table Mountain site (STM) based on the programming and consistent with the intent of the General Development Vision (GDV).
E. Use results of the Design Charette process to gather requirements and to arrive at a decision for the locations and configuration of the multi-module RSF development and Alternative A and Alternative B.
F. Lead and develop the specific architectural programming for the selected module incorporating NREL requirements.
G. Provide completed site plan for the selected Alternative showing multi-module RSF development and selected module integrated with existing facilities and utilities, roads, and parking.
H. Provide space layouts to enhance staff productivity and plan for changes that NREL envisions in the workplace over the next 10-20 years that could be demonstrated in the selected module and incorporated into other buildings built on the NREL campus over time.
I. Provide building elevations, materials concepts and suggested architectural features for NREL to choose from that fit the energy conservation and other goals listed in the requirements.
J. Provide Conceptual Design Report for the selected Alternative with, at a minimum, the following sections or information:
    1. Site selection criteria section that describes why this particular site meets Mission Needs Requirements and is best suited for this facility.
    2. Constraints section that discusses site, transportation, parking, and utility or building constraints if any.
    3. Utility requirements section that describes what utilities are required to make the selected building and site function (with expansion capability). Provide graphics to locate utilities and narrative to describe the connections.
    4. Architectural programming data section.

5. Disciplines section that describes how the design disciplines shall coordinate their efforts. This section shall also call for a constructability review and describe how it is to be accomplished.
6. Long lead items section that contains information and acquisition plan.
7. Design options section for renewable products included in the conceptual design report.
8. Fire and electronic systems section that includes written description of the fire safety systems and electronic system information.
9. LEED section that describes how the LEED performance and Energy Efficiency specifications are to be achieved.
10. Comprehensive strategy and LEED Checklist section.
11. Life cycle section that includes a complete life cycle cost analysis.
12. Calculations section that includes all back up calculations and analysis.
13. Review and Acceptance section that describes the commissioning and acceptance process in detail, with review processes and documentation requirements.
14. Outline specifications section..
15. Cost estimate section that provides a range for the selected module.
16. Value Engineering section that describes the cost options reviewed on this project under the value engineering study
17. Decisions section that includes all design decisions reached at meetings, through reviews or through other communications.
18. NEPA section that provides documentation that supports Environmental Assessment.

K. The subcontractor shall provide NREL the necessary documents to assist NREL in obtaining the required DOE (Office of Engineering and Construction Management) OECM Critical Decisions (CD). A summary of CD-1 and associated documentation requirements follows -

CD-1 – occurs after completion of CDR

1. CDR
2. Schedule ranges
3. Cost Estimate range
4. Scope range
5. Safety Documentation
6. Risk Management Assessment
7. Acquisition Strategy (by NREL)

Refer to the Project Schedule for expected duration of the CD processes.

L. See General Requirements Section.

<u>Deliverables</u> – Due Date 64 calendar days after alternative selection

The subcontractor shall issue a 60% CDR for a formal NREL/DOE review. Refer to Table 1.7 for items required and number of copies. NREL and DOE will review and provide comments. The subcontractor design/build team shall address, resolve and document all comments. After the review comment resolutions have been incorporated and the CDR is complete, the subcontractor design/build team shall deliver the 100% final CDR documents as listed in Table 1.7.

Table 1.7 CDR Deliverables

ITEM	DESCRIPTION	60% Review	100% Final
1	Conceptual Design Report - 3 ring binders - Sections clearly labeled	12 sets - Report includes Items 2 thru 8 (except as noted in Item 3)	12 sets - Report includes Items 2 thru 8 (except as noted in Item 3)
2	Drawings (included in binder) - Site and utility plan - Floor plans - Roof plan - Roof framing plan - Building elevations - Sections - Foundation plan - Structural sections - Mechanical/piping schematics - Mechanical schedules - Electrical one-line diagram - Others as required for a complete CDR package		
3	Full-size color renderings, mounted	Only 2 req'd	Only 2 req'd
4	Project Schedule		
5	Outline Construction Specifications		
6	Range of Cost Estimate for design & construction		
7	LEED Information		
8	Value Engineering process		
9	Life Cycle Cost Analysis		
9	Energy Analysis		
10	Electronic media of all items	1 set	1 set

The subcontractor shall provide documentation to obtain OECM CD-1.

Task 1.8 Provide a definitive proposal for the development of a preliminary design for the selected module

After completion of the CDR, the subcontractor will provide a definitive proposal for the preliminary design of the construction documents for the selected module as defined in Attachment 2. This proposal shall include a definitive schedule and price proposal and shall include sufficient data to evaluate project progress and determine progress payments using industry standard earned value management methodology.

Task 1.9 Integrate the conceptual design of the RSF multi-building development into NREL's General Development Vision

The subcontractor shall execute Task 1.9 concurrently with the execution of Tasks 1.1 through 1.8, integrating into NREL's General Development Vision both the multi-module RSF development and the selected module.

A. Once the final location of the selected module is determined, the subcontractor shall:
    1. Update all of the STM site drawings in the GDV to identify this location as well as updates of parking and roads and other infrastructure and multi-module RSF development.
    2. Update the GDV with new 2-D and 3-D drawings and provide text to accompany the drawings. Specifically GDV Figures 3.2 - 3.10 shall be updated.
    3. Provide two new perspective drawings of the campus in a style that is appropriate for use in a brochure to highlight and/or publicize NREL's new campus building projects. Completing several of these figures may involve reconfiguring and photographing NREL's existing site model, revising drawing color schemes, adding labeling, etc.
B. Interaction with local utility providers and jurisdictions may be required under this task.
C. See General Requirements Section.

<u>Deliverables</u> – Due date same as CDR

The subcontractor shall deliver an electronic copy of the updated GDV drawings and text as specified above. These drawings and text will be inserted into the existing GDV document by NREL.

Attachment 2

Details for Option 1

OPTION 1 Develop a preliminary design for the selected module of the multi-building RSF development

Task 2.1 Preliminary Design

A. Final construction documents and submittals for:

1. Site Grading
2. Underground Utilities and In-Slab Utilities
3. Foundation Design and Building Structural Framing

B. Preliminary design for remaining building components and systems.

C. Fenestration and thermal envelope with preliminary energy analysis calculations.

Task 2.2 Update Value Engineering Study led by a Value Engineering professional

Task 2.3 Provide a definitive proposal for the final design / build for the selected module

Upon exercise of Option 1 subcontractor will receive the Notice to Proceed for the Preliminary Design of the selected module.

Task 2.1 Preliminary Design

A. Based on the decisions reached with NREL in the Conceptual Design, develop construction documents. Design reviews will be held at the 60% and 90% completion points. NREL will perform a formal review of the 60% and 90% design deliverables. The subcontractor shall address, resolve and document all comments for each formal review. Comment resolutions are required to be incorporated prior to issuing the final construction set documents.

B. The subcontractor shall provide a selected module design based on the conceptual design information of the Base Period.

C. Selected module design shall not include the design of any new site infrastructure. These utilities will be provided under a separate contract. The subcontractor shall provide the design of adequate surface parking for the number of occupants as determined in the conceptual design. The facilities shall include a dock/service area.

D. The subcontractor shall provide NREL the necessary documents to assist NREL in obtaining the required DOE (Office of Engineering and Construction Management)

OECM Critical Decisions (CD). A summary of CD-2 and 3 and associated documentation requirements follows –

CD-2 and 3 – occurs after completion of preliminary design

- Detailed Resource Loaded Schedule
- Detailed Cost Estimate
- System Functions and Requirements Documents (design criteria)
- Results/Responses to Preliminary Design Review
- Project Execution Plan (by NREL)
- Hazards Analysis
- Risk Management Assessment
- Acquisition Strategy (by NREL)

Refer to the Project Schedule for expected duration of the CD processes.

E. See General Requirements Section.

Deliverables –

Table 2.1. Preliminary Design Deliverables
Due Dates: 60% Review – 77 calendar days after Option 1 Notice to Proceed
90% Review – 35 calendar days after 60% review submittal
Final – 14 calendar days after 90% review submittal

ITEM	DESCRIPTION	60% Review	90% Review	Final
1	Original Plots (full size)	-	-	1 set
2	Original Plots (half size)	-	-	1 set
3	Original Specifications	-	-	1 set
4	Construction drawings (full size)	8 sets	8 sets	8 sets
5	Construction drawings (half size)	8 sets	8 sets	8 sets
6	Construction Specifications	8 sets	8 sets	8 sets
7	Design Calculations and analysis (including daylighting concepts analysis, life cycle update, and recommended product data sheets)	8 sets	8 sets	8 sets
8	Life cycle cost analysis update			
9	Cost Estimate for construction	8 sets	8 sets	8 sets
10	Electronic media of items 4 thru 8	1 set	1 set	1 set
11	Original drawing set with A/E wet seal and signature	-	-	1 set

Task 2.2 Update Value Engineering Study led by a Value Engineering professional

Update the Value Engineering Study—At the 60% preliminary design review the subcontactor shall present a formal Value Engineering Study based on the components in the Preliminary Design. This study should also address any update required in the Life Cycle Cost Analysis for the selected alternate.

Task 2.3 Provide a definitive proposal for the final design / build for the selected module

After completion of the preliminary design, the subcontractor will provide a definitive proposal for the final design / build for the selected module. This proposal shall include a definitive schedule and price proposal and shall include sufficient data to evaluate project progress and determine progress payments using industry standard earned value management methodology.

Attachment 3

Details for Option 2

OPTION 2 Final Design / Build of the selected module for the multi-building RSF development

Task 3.1 Complete the final design of the selected module

Task 3.2 Administer/manage construction of the selected module

Task 3.3 Complete construction of the selected module

Task 3.1 Complete the final design of the selected module

A. Based on the Preliminary Design, develop final construction documents. Design reviews will be held at the 60% and 100% completion points. NREL will perform a formal review of the 60% and 100% design deliverables. The subcontractor shall address, resolve and document all comments for each formal review. Comment resolutions are required to be incorporated prior to issuing the Final construction set documents.

B. The subcontractor shall provide a selected module design based on the preliminary design information.

C. The subcontractor will resolve all conflicts between design and construction due to design omissions, errors, and deficiencies at no additional charge to NREL. The subcontractor will log and inform NREL of such inconsistencies.

D. The subcontractor will implement a change control process that requires NREL approval for any changes to the Final Design construction documents and specifications.

E. Selected construction submittals shall be approved by NREL. These selected submittals will be defined by NREL prior to execution of Option 2.

F. See General Requirements Section.

Deliverables –

Due Dates: 60% Review – 60 calendar days after Option 2 Notice to Proceed
100% Review – 35 calendar days after 60% review submittal

Table 3.1. Final Design Deliverables

ITEM	DESCRIPTION	60% Review	100% Review	Final
1	Original Plots (full size)	-	-	1 set
2	Original Plots (half size)	-	-	1 set
3	Original Specifications	-	-	1 set

4	Construction drawings (full size)	8 sets	8 sets	8 sets
5	Construction drawings (half size)	8 sets	8 sets	8 sets
6	Construction Specifications	8 sets	8 sets	8 sets
7	Design Calculations and analysis (including daylighting concepts analysis, life cycle update, and recommended product data sheets)	8 sets	8 sets	8 sets
8.	Life cycle cost analysis update			
9	Cost Estimate for construction	8 sets	8 sets	8 sets
10	Electronic media of items 4 thru 8	1 set	1 set	1 set
11	Original drawing set with A/E wet seal and signature	-	-	1 set

Task 3.2 Complete Value Engineering Study led by a Value Engineering professional
Complete the Value Engineering Study—At the 60% final design review the subcontactor shall present a formal Value Engineering Study based on the components in the Final Design. This study should also address any update required in the Life Cycle Cost Analysis for the selected alternate.

Task 3.3 Administer/manage construction of the selected module

A. The Subcontractor shall provide all normal and customary labor, materials, and services for construction administration and management.

B. Construction administration and management services shall consist of technical assistance, contract compliance, inspections, cost control, subcontractor procurement, scheduling, coordination, testing, shop drawing processing/review, product warranties/related documentation distribution, startup, independent commissioning support, project closeout, and management support to NREL.

C. The Subcontractor shall review and verify the maintenance of “red line" drawings and shall use those drawings to provide final as-built documents. The Subcontractor shall produce from the red-line drawings one set of reproducible record drawings and one set of record drawings on electronic media. This is due within four (4) weeks of Final Construction Completion. The submittals shall conform to existing NREL CAD standards.

D. The Subcontractor shall provide outline specifications and final specifications shall be in standard CSI/Master Format 2004 and shall address each section that applies to the project.

E. NREL shall provide the subcontractor design/build team with the following:

1. CAD drawings of existing utilities and site planning information.
2. Existing space planning criteria and space plans.
3. NREL Standard Specifications and Design Guidelines. These documents shall be used as reference only. Project specific specifications shall be written and tailored to the RSF development requirements.
4. NREL is responsible for the LEED submittals.

F. See General Requirements Section.

Task 3.3 Complete construction of the selected module

Due Dates: Substantial Completion – 365 calendar days after Option 2 Notice to Proceed
Final Completion – 393 calendar days after Option 2 Notice to Proceed

The subcontractor shall provide all management, materials, equipment and labor necessary to complete the work indicated on the drawings and described in specifications, or reasonably inferred, to construct the selected module.

A. Work includes, but is not necessarily limited to construction of Class A office space for the selected module. Building occupancy will be offices with a visitor's area to showcase the high-performance building design, features, and state-of-the-art technologies. Other specialty spaces may include meeting/conference space, a library, and/or a data center.
B. Generally, work shall include:
   1. General Requirements, including Environmental Requirements and LEED Matrix; Alternates, and participation in Systems Commissioning. NREL will have a separate contract for Commissioning; however, subcontractor is responsible for testing and verifying that all module systems and elements are ready for commissioning prior to Substantial Completion. Subcontractor will be accountable for any additional commissioning costs resulting from their insufficient preparation.
   2. Site Construction including earthwork and parking.
   3. Concrete
   4. Masonry
   5. Metals
   6. Wood and Plastics
   7. Thermal and Moisture Protection
   8. Openings
   9. Finishes
   10. Specialties
   11. Equipment, including Projection Screens, Hydraulic Dock Levelers, and Truck Restraints
   12. Manual Roller Shades and Motorized Roller Shades
   13. Special Construction including Lightning Protection Systems; Security Access Control and Closed Circuit Television Surveillance Systems; Fire Alarm System and Fire Suppression System
   14. Conveying Systems
   15. Mechanical, Plumbing and HVAC including Mechanical Systems Commissioning

16. Electrical including Programmable Lighting Control System and telecommunication conduit and wiring (including wiring through furniture panels); Zone Calculations and Electrical Systems Commissioning

*The following work is **not** included under this statement of work:*

1. Site utilities 5' beyond building perimeter
2. Roads and sidewalks beyond exiting requirements
3. Office furniture including telecommunication/information technology equipment, equipment connection, equipment tie-in, and testing
4. Independent commissioning services
5. Independent testing services – this includes concrete, steel, geotechnical, roofing, etc.
6. Utility tap fees.

C. Environment, Safety, and Health:

1. Environment – The following environmental requirements are in effect for this project:
   - *Particulate Emissions Control Plan* - Fugitive dust shall be controlled by watering, tracking prevention, tracking cleanup, minimizing areas disturbed, and vehicle speed control in compliance with NREL's Particulate Emissions Control Plan.
   - *Storm water Pollution Prevention Plan* - Erosion and contamination of storm water runoff will be controlled by using erosion mats, hay bails, or other preventive measures in compliance with NREL's Storm water Pollution Prevention Plan. A permit is required prior to the discharge of any material to the environment except unprocessed water.
2. Safety and Health – The following health and safety requirements are in effect for this project:
   - *Subcontractor Safety Plan* - The subcontractor shall submit a site-specific safety plan that is appropriate for the size of the project and the hazard level expected. This plan must be approved by the NREL ES&S Office prior to the start of work. Guidelines for preparation of the safety plan are found in NREL's Construction Safety Program. Required elements of the Subcontractor Safety Plan include:
   - *NREL Construction Safety Policy* - Safety and Health requirements specific to NREL are included in this policy, which is available from the NREL Environment, Safety and Security Section.
   - All portions of 29 CFR 1910, Occupation Safety and Health Standards for General Industry and 29 CFR 1926, Safety and Health Regulations for construction.
   - *Job-site Inspections* - Representatives of DOE, NREL and/or OSHA may perform inspections. Inspectors have the authority to stop work if safe work practices are not being utilized.
   - *Emergency Reporting* - All emergencies, including the need for emergency medical services, will be reported by calling the NREL emergency number 1234 or 303-384-6811.
   - *Accident Reporting* - All bodily injury, property damage incidents, and near misses shall be reported to NREL immediately. A written report (e.g., First Report of Injury) is required. This does not relieve construction subcontractors of OSHA or insurance carrier reporting requirements.

- *Exit Access* - A clear path of at least 44" shall be maintained to all exits.
- Electrical work shall comply with the National Electric Code, OSHA, and NREL's Electrical Safety Program.
- Scaffolding and ladders shall comply with OSHA's and ANSI regulations and/or standards.
- Body Harnesses with Shock Absorbing Lanyards are required for work on unprotected surfaces at heights greater than or equal to six feet.
- Personnel Protective Equipment will be required as appropriate for the work being performed. At a minimum, approved safety glasses, hard hats and appropriate safety shoes are required at all times.

3. *ES&S Construction Contractor Safe Work Permit* - This Permit provides the authorization basis for construction work to begin. The Permit shall be available and posted at the job site. The subcontractor shall abide by the terms and conditions specified in this Permit.
4. *Hazardous Materials List* - A list of all hazardous materials used on the job shall be submitted to the ES&S Office for approval before the start of work. If requested, the subcontractor shall also supply information that documents the contractor's Hazard Communication program. Material Safety Data Sheets (MSDS's) shall be available on the job site. The subcontractor shall notify NREL's project manager prior to generating hazardous waste.
5. *Pre-construction Orientation* - A pre-construction orientation shall be conducted prior to the start of construction.
6. *DOE Poster* - The DOE Rights & Responsibilities Poster shall be posted at the job site where possible. This poster will be issued by NREL during the Pre-construction Orientation.
7. *NREL Hot Work Permit* - This Permit represents the authorization basis for conducting hot work. Hot work is defined as activity involving the use of cutting torches, welders, open flame devices, spark producing grinders, or any work that could result in fire potential.
8 *Confined Space Permit* - All work requiring entry into a confined space (e.g. manholes, electrical vaults, tanks, vessels, etc.) shall be conducted in accordance with the requirements set forth in NREL's Confined Space Program. The subcontractor shall provide the required equipment and qualified, properly trained personnel.
9. *Lockout/Tag out* - All work on systems or equipment that may contain hazardous energy shall be conducted in accordance with the NREL LO/TO program and comply with OSHA LO/TO requirements.
10. *Excavation Permit* - An Excavation Permit is required for trenching, excavating, digging, floor cutting or related activities that could result in damage to existing utilities or injury to workers.
11. *Fire System Outage Permit* - This Permit is necessary for work that will require disabling or impairing a fire detection, alarm or suppression systems.
12. *Electrical Work* – NREL strongly discourages energized electrical work. In the event that the Subcontractor identifies a need to perform energized electrical work, the Subcontractor shall establish, in collaboration with and approval from the NREL Project Manager, a specific plan to conduct such energized work, including written

specifications of the circumstances, conditions, restrictions, location, and time of performance for the planned work.

D. Security - The following security requirements are in affect for this project:
   1. Security and safety requirements
      - NREL has established security and safety requirements to govern access onto NREL operated facilities by Subcontractor's employees (and its lower-tier subcontractor's employees) and their officers, agents, and any other persons representing the Subcontractor.
      - The introduction of certain "controlled" commodities and/or activities on the NREL operated facilities is prohibited. Prohibited articles include firearms, explosives devices, incendiary devices, dangerous weapons or materials, controlled substances (illegal drugs), alcoholic beverages, and livestock. NREL operated facilitates and DOE –owned or leased property is closed to all hunting.
      - As a condition of entry to NREL operated facilities, the Subcontractor agrees to permit NREL Security Personnel to search the Subcontractor's employees (and it's lower-tier subcontractor's employees) and their officers and agents' vehicles, packages, tool boxes, or other containers for the purpose of preventing prohibited articles from being onto NREL operated facilities or to detect or deter the unauthorized removal of Government property from NREL operated facilities.
      - The Subcontractor is solely responsible for the security of the Subcontractor's employees (and its lower-tier subcontractor's employees) and their officers and agents' materials and equipment at the NREL operated facilities. Any security system the Subcontractor may elect to use (fences, keys, alarms, etc.) must be coordinated with the NREL Project Manager.
      - The Subcontractor is responsible to advise the NREL Project Manager promptly of any non-routine events, occurrences, incidents, accidents, etc., particularly in situations involving lost time accidents and ambulance runs, occurring under this subcontract.
      - NREL Security reserves the right to revoke site access authorization for any person violating NREL or DOE safety and security policies and procedures.
   2. Access requirements for U.S. citizens.
      - Access to NREL operated facilities is controlled in accordance with the DOE's security requirements. The Subcontractor shall ensure that any of the Subcontractor's employees (or it's lower-tier subcontractor's employees) and their officers or agents who will enter onto the NREL operated facilities are specifically authorized site access under the NREL requirements set forth in the NREL Access Control Policy and Program, including identification, badging, and registration by NREL Security. A three-day advance notice to NREL security processed through the NREL Subcontract Administrator is required prior to access by U.S. Citizens.
   3. Access requirements for persons who are not U.S. citizens.
      - The Subcontractor shall ensure that any of the Subcontractor's employees (or it's lower-tier subcontractor's employees) and their officers or agents who will enter onto NREL operated facilities and who are not U.S. citizens meet the requirements set forth in NREL's Foreign National Management Policy and

Program, including: (1) appropriate work authorization documentation (i.e. Visa), (2) completion of an NREL Foreign National Data Card, and (3) NREL Manager-level approval.

- Foreign Nationals from DOE-designated "Sensitive Countries" will be processed for a Federal background check. This process requires a minimum of two weeks. Foreign Nationals from DOE-designated "Terrorist Supporting Countries" will be processed for an extensive Federal background check and DOE Headquarters approval. This process requires a minimum of three months. The Subcontractor should contact the NREL Subcontract Administrator to obtain the most current listing of "Sensitive Countries" and "Terrorist Supporting Countries."
- It is the responsibility of the NREL Technical Monitor and the NREL Subcontract Administrator to assure that the Subcontractor provides all documentation and meets all requirements within the appropriate time frames (at least two weeks) for NREL Security to process and approve the request for access. Any person(s) denied access by NREL Security or DOE shall not be assigned by the Subcontractor to enter onto or perform subcontract work at NREL operated facilities.
- Prior to the initiation of subcontract that requires entry onto NREL operated facilities, the Subcontractor shall provide to the NREL Subcontract Administrator advance notice and necessary evidence (including visa types and expiration dates) that legal work permits have been obtained from the U.S. Immigration and Naturalization Service. Further, the Subcontractor is responsible to ensure that such permits are properly maintained for any of the Subcontractor's employees (and its lower-tier subcontractor's employees) and their officers and agents who are not U.S. citizens for the duration of subcontract work at NREL operated facilities.
- After the Subcontractor (and its lower-tier subcontractors) has commenced work under the subcontract, the Subcontractor shall provide to the NREL Subcontract Administrator the same advance notice and necessary evidence (including visa types and expiration dates) for all subsequently assigned individuals who are not U.S. citizens who will enter onto NREL operated facilities.

4. All persons entering NREL operated facilities must display a valid NREL (or DOE) issued badge. The Subcontractor is responsible to coordinate badge requirements for entrance onto NREL operated facilities for all the Subcontractor's employees (and its lower-tier subcontractor's employees) and their officers and agents to ensure the display and return of all issued badges.
    - The Subcontractor is responsible to coordinate with the NREL Project Manager all vehicle parking requirements needed to perform the subcontract work on the NREL premises. Vehicle access of the NREL operated facilities is controlled on a 24-hour, 7-day per week basis.
5. Deliveries of material and equipment must be arranged in advance with the NREL Project Manager.
6. At any time, Security Conditions (usually following the lead from the Department of Homeland Security) may change requiring the implementation of additional security measures at NREL that may affect construction work on the site. Additional measures range from mandatory vehicle searches up to and including construction work

stoppages. Any changes in conditions will be reported through the NREL Project Manager.

7. In addition to the requirements above, the subcontractor shall be responsible for the security of all its personnel, materials, and work in progress until the work is accepted by NREL as being substantially complete. Subcontractor's personnel, lower-tier subcontractors, material suppliers, vendors and other construction personnel shall not use NREL facilities nor shall they be permitted outside the limits of the Project Site, except for normal access to and from the site

E. Subcontractor's Responsibilities: The subcontractor shall be responsible for coordinating all scheduling, questions, problems or operational matters with the NREL Project Manager. The subcontractor shall designate a single point of contact that shall be responsible for coordinating activities with the NREL Project Manager. All activities that require interruption of existing services or operations i.e. electrical power, gas sewer, water, traffic etc., shall be scheduled with the NREL Project Manager at least 5 days in advance.

F. Normal Working Hours: Normal working hours are 7:00 AM to 5:00 PM, Monday through Friday, except holidays. Subcontractor personnel are not allowed on site during non-work hours unless arrangements have been made, in advance, with the NREL Project Manager. When subcontractor personnel are approved to work other than normal hours the NREL Security Desk shall be advised, in advance by telephone at 303-384-6811.

G. See General Requirements Section.